Self-Generation Incentive Program

Self-Generation Incentive Program (SGIP)
Heat Pump Water Heater (HPWH)
Workshop

March 19, 2020

California Public Utilities Commission (CPUC)

Nora Hawkins & Nate Kinsey
CPUC Energy Division

WebEx and Call-in Information

WebEx:

https://cpuc.webex.com/cpuc/j.php?MTID=m602de0c517b3480c23000c7fba06dad3

Recommend using audio through your computer if possible.

Call-in: +1-415-655-0002 (please note this number has tolls)

Meeting number (access code): 262 239 603

All participants in listen-only mode by default.

Please submit questions/comments via the WebEx chat and/or use the “raise hand” function.

Ground Rules

- State your name and organization at start of your comment or question.
- Keep comments focused on the agenda topic being discussed.
- If you are unmuted, please try to keep noises around you to a minimum.
- If you are only participating via phone and you have a question, please email it to: Nora.Hawkins@cpuc.ca.gov

Agenda:

9:30am – 9:45am	**Welcome, Safety, Introductions, Objectives and Scope |** Energy Division Staff
9:45am – 10:00am	**CPUC HPWH Programs Overview |** Energy Division Staff
10:00am – 10:20am	**Overview of SGIP: Where do HPWHs fit? |** SGIP PAs
10:20am – 10:50am	**HPWH Basics: Technologies Types, and Control Options |** Pierre Delforge – NRDC
	Break (10 minutes)
11:00am – 11:30am	**SGIP HPWH Straw Proposal Presentation |** HPWH Working Group
11:30am – 12:30pm	**SGIP HPWH Straw Proposal Feedback and Q&A |** Facilitated by Energy Division Staff

*Stay tuned for part two of this workshop in late April, or early May.

Recent CPUC Decisions on SGIP

(HPWH explicitly brought into SGIP as thermal energy storage technologies)

- Decision 19-08-001 adopted on August 1, 2019
  - "GHG Decision"
  - Modifies program rules to ensure energy storage systems reduce greenhouse gases (GHGs) emissions

- Decision 19-09-027 adopted on September 12, 2019
  - "Equity Resiliency Decision"
  - Created a $4 million budget to fund heat pump water heaters (HPWH) for equity customers

- Decision 20-01-021 adopted on January 16, 2020
  - "SB 700 Decision"
  - Adopts an annual funding level of $166 million for 2020 through 2024
  - Added an additional $40.7 million for "general market" HPWH incentives

Workshop Objectives

D.19-09-027:

“ The HPWH workshop should seek to address these priority questions raised by parties in their comments including:

- Achieving market transformation of HPWHs;
- HPWH incentive design;
- Administration of SGIP incentives;
- Achieving equity in HPWH deployment;
- Ensuring load shifting;
- Future allocation of SGIP incentives; and,
- Coordination with other Commission programs.”

D.20-01-021:

“HPWH deployment may provide GHG reductions that significantly exceed the five-kilogram carbon dioxide per kWh(kg CO2/kWh) required for storage system by this Commission in the GHG Decision. . . this workshop will consider whether SGIP should require use of controls to ensure HPWH re-heating off-peak.”

Out of Scope for the Workshop

- Funding levels for HPWH within SGIP beyond what is provided in the decisions.
- Statewide decarbonization policy.
- How to modify other programs that are or will provide funding for HPWHs.
  - Nate will be summarizing these programs next.

Guiding Principles for Workshop Dialogue

- Shared goal of determining the most effective and least administratively burdensome way to support HPWHs through SGIP.

- The conversation needs to focus on how HPWH deployment will align with SGIP's statutory mandate to improve efficiency and reliability of the distribution and transmission system, and reduce emissions of GHGs, peak demand, and ratepayer costs (Public Utilities Code §379.6).

- Consensus need not be reached today. There will be a part two of this workshop in the next month or so. In addition, CPUC will ultimately issue a ruling or staff proposal for comment.

SGIP Resources

- Statewide program page: https://www.selfgenca.com/
- CPUC Docket for recent decisions in Docket R.12-11-005: https://apps.cpuc.ca.gov/apex/f?p=401:1:0
- CPUC point of contact:
  - Nora Hawkins, Lead SGIP Analyst in the Energy Division
  - Email: Nora.Hawkins@cpuc.ca.gov

Self-Generation Incentive Program

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CPUC HPWH & Building Decarbonization Program Overview

SGIP HPWH Workshop Part 1

March 19, 2020

Nate Kinsey, Regulatory Analyst, CPUC

nk2@cpuc.ca.gov

Building Decarbonization at the CPUC

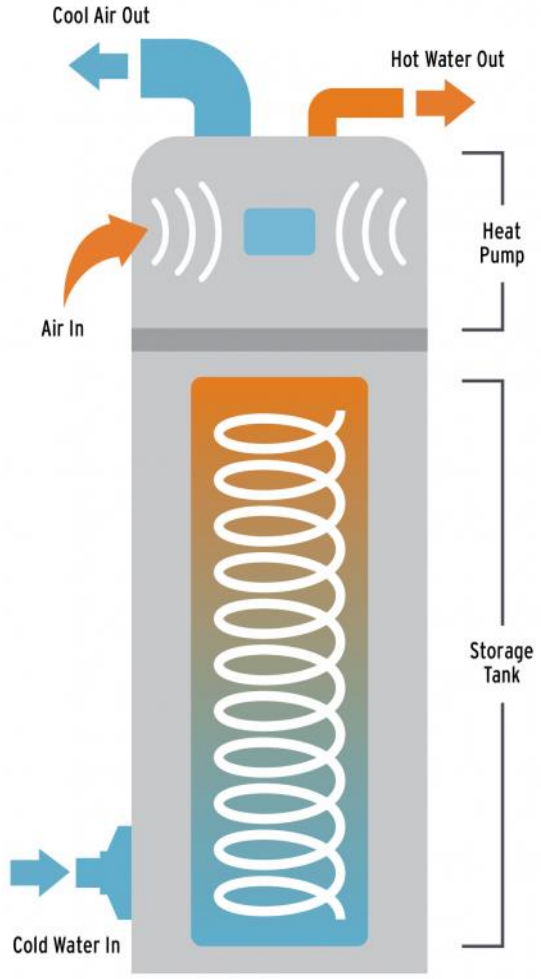
Timeline of Building Decarbonization Activities

- **June 2017** – NRDC and CEDMC file Petition for Review and Modification of the energy efficiency three-prong test.
- **September 2018 –** SB 1477 & AB 3232 signed by Governor Brown.
- **December 2018 –** CPUC adopts D. 18-12-015 approving electrification of 1000+ households in the San Joaquin Valley.
- **January 2019 -** CPUC opens new rulemaking, R.19-01-011, on Building Decarbonization.
- **July 2019 –** CPUC adopts D.19-06-032 implementing AB 2868 Energy Storage Programs including HPWHs.

Building Decarbonization at the CPUC

Timeline of Building Decarbonization Activities continued:

- **August 2019 –** CPUC adopts D.19-08-009 replacing the three-prong test with the Fuel Substitution Test for energy efficiency measures.
- **September 2019 –** CPUC adopts D. 19-09-027 adding SGIP incentives for HPWHs.
- **November 2019** – SCE files its ESA 2021 -2026 A.19-11-004 requesting approval of two electrification pilots.
- **December 2019 –** CPUC adopts D. 19-12-021 approving Market Transformation Framework using energy efficiency funds.
- **January 2020 –** CPUC adopts D. 20-01-001 providing an additional $40 million in SGIP funding for HPWHs.
- **February 2020 –** CPUC issues Proposed Decision for SB 1477 building decarbonization pilot programs.



Building Decarbonization at the CPUC

CPUC Building Decarbonization Facts:

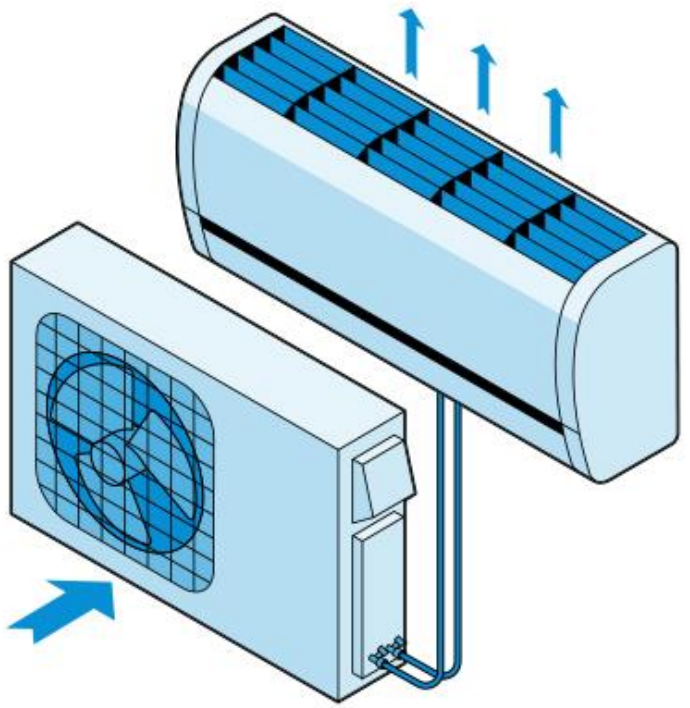
The CPUC has approved or is considering approval of 15 different electrification programs across multiple proceedings.

- Total funding as currently proposed is approximately $420 million.*
- All these programs incentivize heat pump water heaters.

CA Building Decarbonization Facts:

Other state agencies & actors are also funding electrification and HPWHs

- Multiple POUs – SMUD and Palo Alto
- Multiple CCAs – MCE, SCP, SJCE, SVCE, PCE, SJCE
- BAAQMD – Advanced Energy Rebuild
- SCAQMD – Zero-Nox Multifamily Affordable Housing Electrification
- CSD – Low Income Weatherization Program (LIWP) Multifamily Program
- SCE - Clean Energy Optimization pilot



* Funding total does not include future third party or IOU energy efficiency programs.

Building Decarbonization at the CPUC

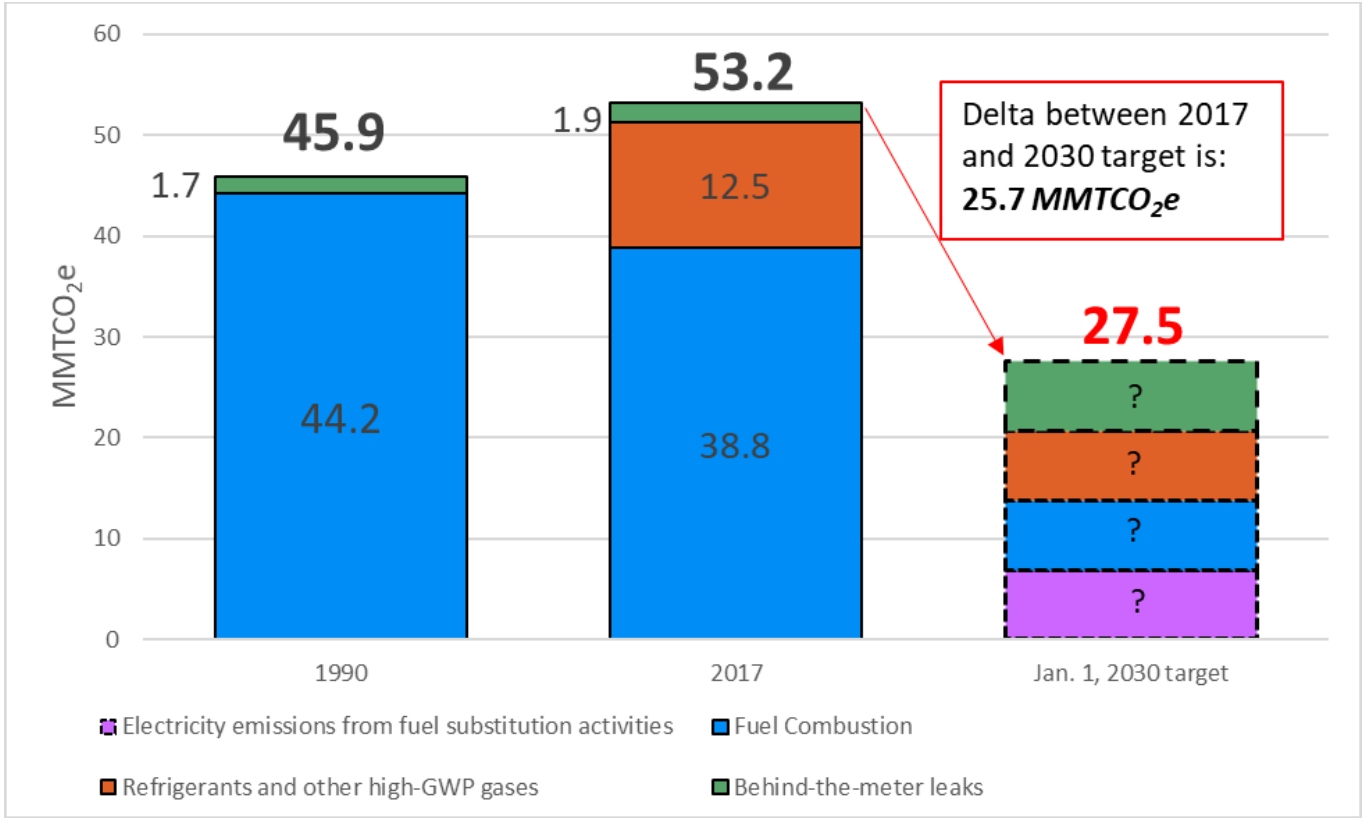
CPUC Building Decarbonizaton Programs
As of 03/18/2020

PA	Program	2020												2021												2022												2023											
		Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MCE	MCE's LIFT Pilot	Program Implementation												Program Evaluation																																			
PG&E	Advanced Energy Rebuild	Program Implementation												Program Evaluation																																			
SCE	Upstream Heat Pump Incentives				Program Implementation												Program Evaluation																																	
SCE	Clean Energy and Resiliency (CLEAR) Rebuild	Program Implementation																																														
BayREN	BAMBE Clean Heating Path & Single Family Home+				Program Implementation																																											
ALL	SJV Clean Energy Pilot	Program Implementation																																														
SCE	DR DAC & Grid Responsive HPWH Study	Program Implementation																																													
PG&E	WatterSaver Program	Program Approval &			Program Implementation																																										
SGIP PAs	SGIP HPWH Program	Program Approval & Design												Program Implementation																																	
CEC*	Building Initiative for Low Emissions Development (BUILD)	Program Approval & Design												Program Implementation																																	
3P*	Technology and Equipment for Clean Heating (TECH)	Program Approval & Design			TECH RFP									Program Implementation																																	
SCE*	ESA Tier 2 - Enhanced Retrofits	Program Approval & Design												0																																	
SCE*	Clean Energy Homes - Affordable New Construction Pilot	Program Approval & Design												Program Implementation																																	
SCE*	Single Family Building Electrification Retrofit Pilot	Program Approval & Design												Program Implementation																																	
SCE*	Smart Heat Pump Water Heater Program	Program Approval & Design																																				Program Implementation											

California's Building Decarbonization Goals

AB 3232 (Friedman):

- Requires the CEC by to produce a plan to reduce buildings emissions by 40% below 1990 levels by 2030.
- Integrated Energy Policy Reports (IEPRs) starting in 2021 required to report GHG emissions associated with supply of energy to residential and commercial buildings.



From CEC Presentation given at Dec. 4, 2019, workshop, "Building Decarbonization Assessment Baseline."

California's Economy Decarbonization Goals

Legislation Summary

- **SB 32 (Pavley) –** 40% reduction in statewide GHGs below 1990 level by 2030.
- **SB 350 (De León) –** Doubling of energy efficiency by 2030 & integrated resource plans.
- **SB 100 (De Leon) –** 60% of electricity must come from renewable sources by 2030, carbon free by 2045.
- **SB 1013 (Lara):** Puts state on path to low GWP refrigerants.
- **SB 49 (Skinner):** Encourages development of "smart" appliances for load management
- **AB 3232 (Friedman):** Requires CEC to produce plans (with CPUC) to reduce buildings emissions by 40% by 2030.
- **SB 1477 (Stern):** Allocates $50 million/year for BUILD and TECH programs, 30% for low income customers. Administered by CPUC.

Building Decarbonization Resources:

CPUC program page: https://www.cpuc.ca.gov/BuildingDecarb/

CPUC Docket for recent decisions in Docket R.19-01-011:
https://apps.cpuc.ca.gov/apex/f?p=401:1:0

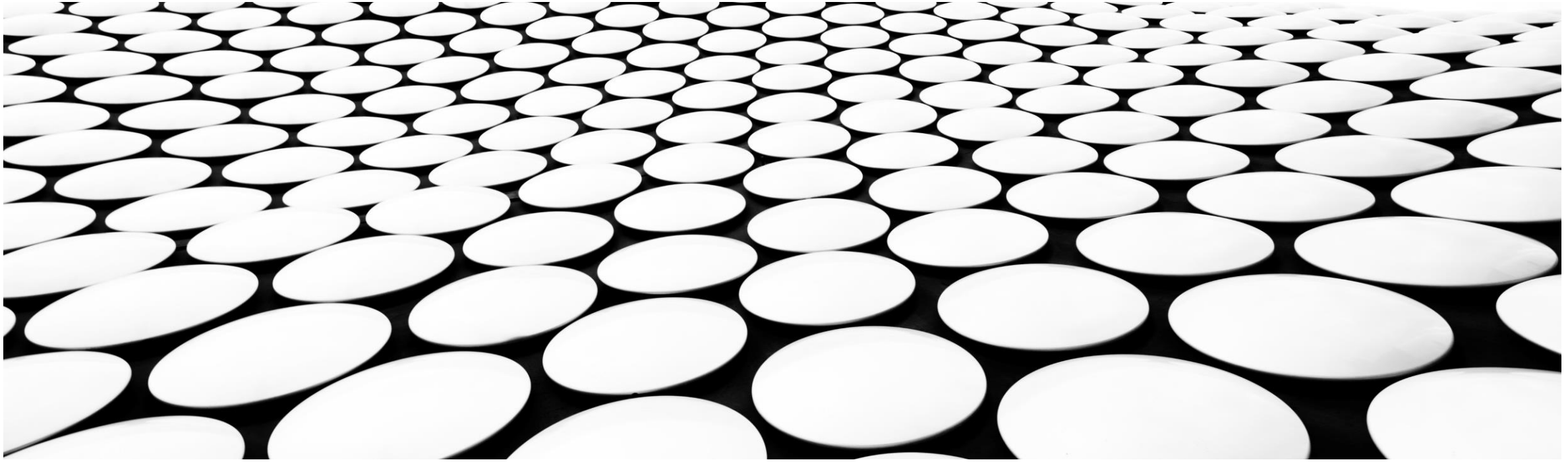
A CPUC Building Decarbonization point of contact:

- Nate Kinsey, Building Decarbonization Analyst in the Energy Division
- Email: nk2@cpuc.ca.gov

Thank you

SELF-GENERATION INCENTIVE PROGRAM

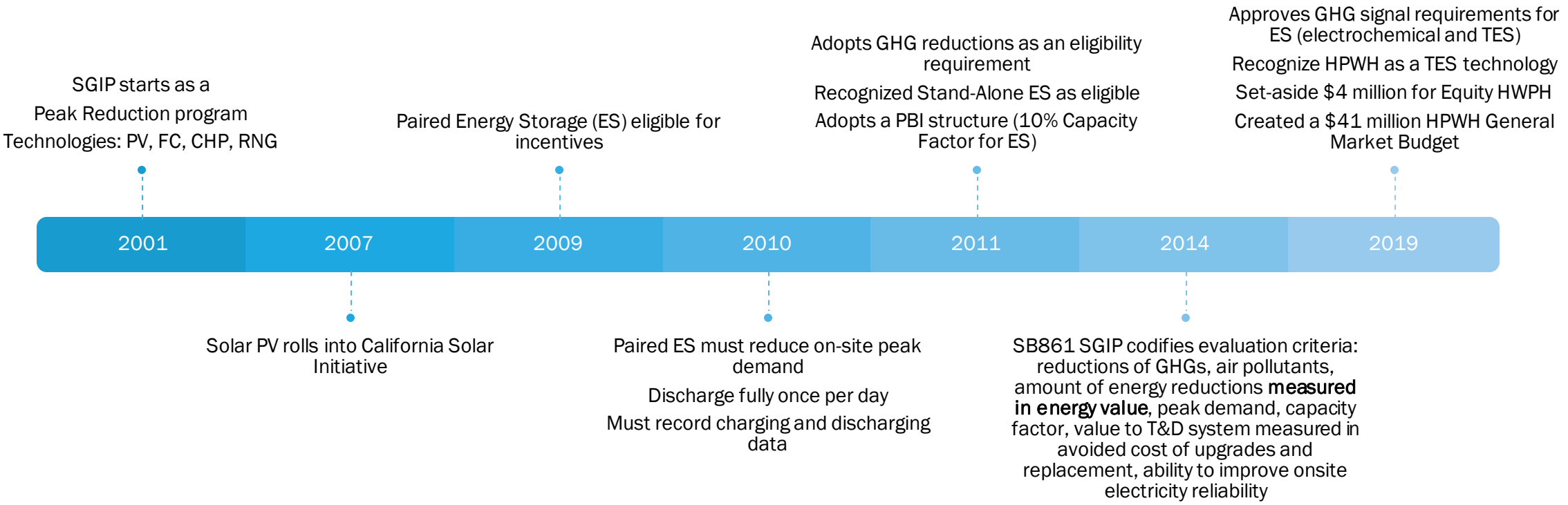
POLICY BACKGROUND AND HEAT PUMP WATER HEATER PARTICIPATION



Agenda

- Overview of SGIP including statutory & program requirements
- Historical incentive structure and format
- Review of two CPUC Decisions that created budgets for HPWH technologies for both general market and equity customers

SGIP MILESTONES



OVERVIEW OF SGIP: STATUTORY REQUIREMENTS

- The Self-Generation Incentive Program (SGIP) provides financial incentives for the installation of new qualifying technologies that are installed to meet all or a portion of the electric energy needs of a facility.
- The Purpose of the SGIP is to:
  - Reduce Greenhouse Gas (GHG) emission
  - Reduce peak demand and customer electricity purchases
    - resulting in the electric system reliability through improved transmission and distribution system utilization
  - Market transformation for distributed energy resource (DER) technologies

OVERVIEW OF SGIP: PROGRAM REQUIREMENTS

"Eligibility for incentives under the program shall be limited to technologies that meet the statutory requirements"

The application process was adopted as a pathway to verify and determine these requirements.

- Technology and participant eligibility 379.6(e):
  - (1) Customer load
  - (2) Peak or grid demand reductions
  - (3) Safe use of T&D system
  - (4) Air quality improvement (CAP)
- (f) Equipment operations, performance, capacity, thermal output, GHG and CAP performance from usage
- (i) Customer classification
- (j) 20% Adder for CA manufactured DER
- (k) Rate recovery allocation information
- (l) Success and impact of the program based on performance measures (1 – 7)

SGIP GENERATION TECHNOLOGY INCENTIVE LEVELS

	Step 1		Step 2		Step 3	
Technology Type	**Initial Incentive Rate**	**Max Incentive w/ biogas adder**	**Initial Incentive Rate**	**Max Incentive w/ biogas adder**	**Initial Incentive Rate**	**Max Incentive w/ biogas adder**
Generation Technologies	**$/W**	**$/W**	**$/W**	**$/W**	**$/W**	**$/W**
Wind	$0.90	n/a	$0.80	n/a	$0.70	n/a
Waste Heat to Power	$0.60	n/a	$0.50	n/a	$0.40	n/a
Pressure Reduction Turbine[18]	$0.60	$1.20	$0.50	$1.10	$0.40	$1.00
Internal Combustion Engine CHP	$0.60	$1.20	$0.50	$1.10	$0.40	$1.00
Microturbine CHP	$0.60	$1.20	$0.50	$1.10	$0.40	$1.00
Gas Turbine CHP	$0.60	$1.20	$0.50	$1.10	$0.40	$1.00
Steam Turbine - CHP[19]	$0.60	$1.20	$0.50	$1.10	$0.40	$1.00
Fuel Cell CHP	$0.60	$1.20	$0.50	$1.10	$0.40	$1.00
Fuel Cell Electric Only	$0.60	$1.20	$0.50	$1.10	$0.40	$1.00

SGIP INCENTIVE STRUCTURE AND ENERGY VALUES (W AND WH)

Table 4: 2020 to 2024 Adopted Allocations and Total Incentives Budgets

	Currently Authorized		Adopted Allocation of 2020-2024 Collections		Total Incentive Funds Available (2019-2025)	
	Percent	Budget as of September 2019 ~~($ millions)~~	Percent	Total Amount (2020-2024) ~~($ millions)~~	Budget ~~($ millions)~~	Percent
Renewable generation	20	$6,760,301	12	~~$97,677,720~~ $97,608,000	~~$104,438,021~~ $104,368,301	9
Large-scale storage	52	$216,818,321	10	~~$81,398,100~~ $81,340,000	~~$298,216,421~~ $298,158,321	25
Equity- Large Scale	17	$52,852,387	0	$0	$52,852,387	4
Residential storage	8	$3,086,504	7	~~$56,978,670~~ $56,938,000	~~$60,065,174~~ $60,024,504	5
Equity-residential	3	$7,231,691	3	~~$24,419,430~~ $24,402,000	~~$31,651,121~~ 31,633,691	3
Equity Resiliency		$100,000,000	63	~~$512,808,030~~ $512,442,000	~~$612,808,030~~ $612,442,000	50
HPWH (General)		$0	5	~~$40,699,050~~ $40,670,000	~~$40,699,050~~ $40,670,000	3
HPWH (Equity)		$4,000,000	0	$0	$4,000,000	
San Joaquin Valley Pilots		$10,000,000	0	$0	$10,000,000	1
Total	**100**	**$400,749,204**	**100**	~~**$813,981,000**~~ **$813,400,000**	~~**$1,214,730,204**~~ **$1,214,149,204**	**100**

CPUC DECISIONS THAT CREATED BUDGETS FOR HPWHS

- **D.19-08-001**

Approved the GHG Signal requirements and applicability to all energy storage technologies, and directed PAs to host a Workshop to address other TES issues, AND recognized HPWH as TES systems:

We clarify that the TES WG may include system, measurement, verification, performance evaluation and other program requirements for TES systems in its scope and that the PAs may include proposals on these topics as part of the advice letter process approved elsewhere in this decision. PAs should submit a proposal for additional compliance options for TES systems having less than an 85 percent SCRTE only if they have a factual basis to believe that implementation of the proposed approach will result in TES systems attaining the five kW/kWh GHG emission reductions required in this decision.

We note that heat pump water heaters are TES systems and the TES WG is authorized to discuss and submit proposals for these technologies as well as larger TES systems.

- **D. 19-09-027**

Approved a $4 million budget for Equity HPWH and directed ED to host another workshop to discuss barriers of adoption.

- **D.20-01-021**

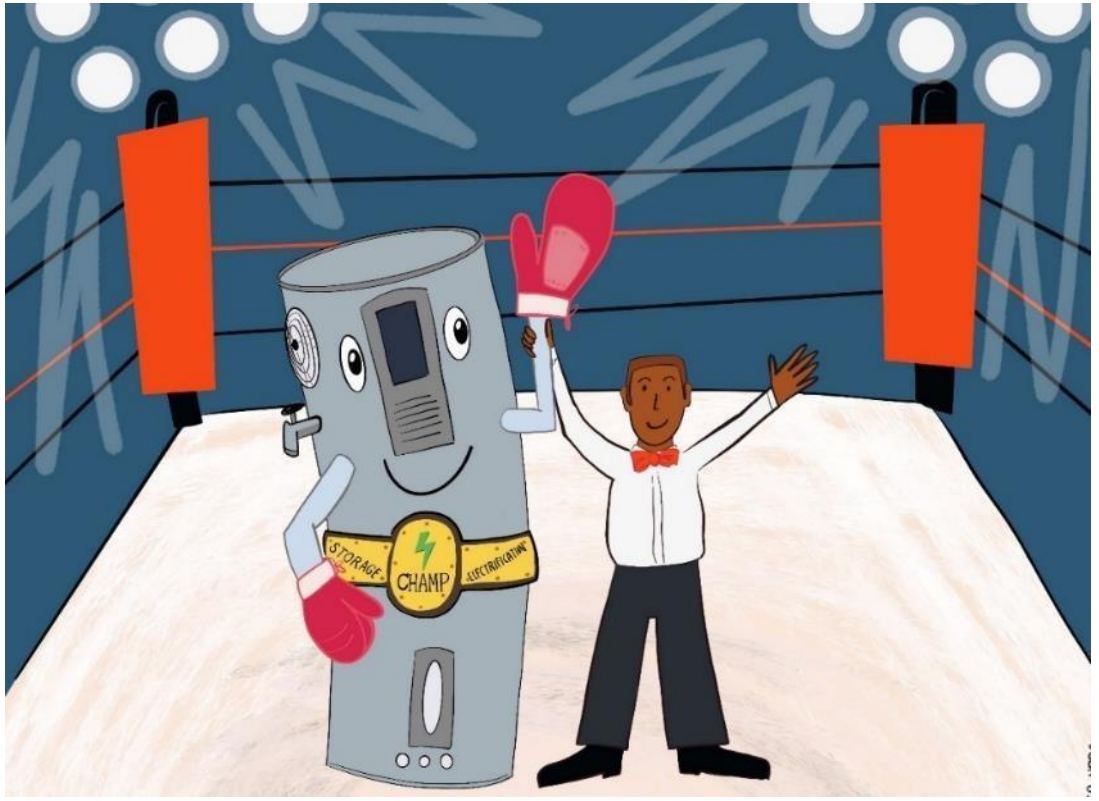
Approved a $41 million budget for general market HPWH projects.

Thank You

HPWH Basics: Technologies and Control Options

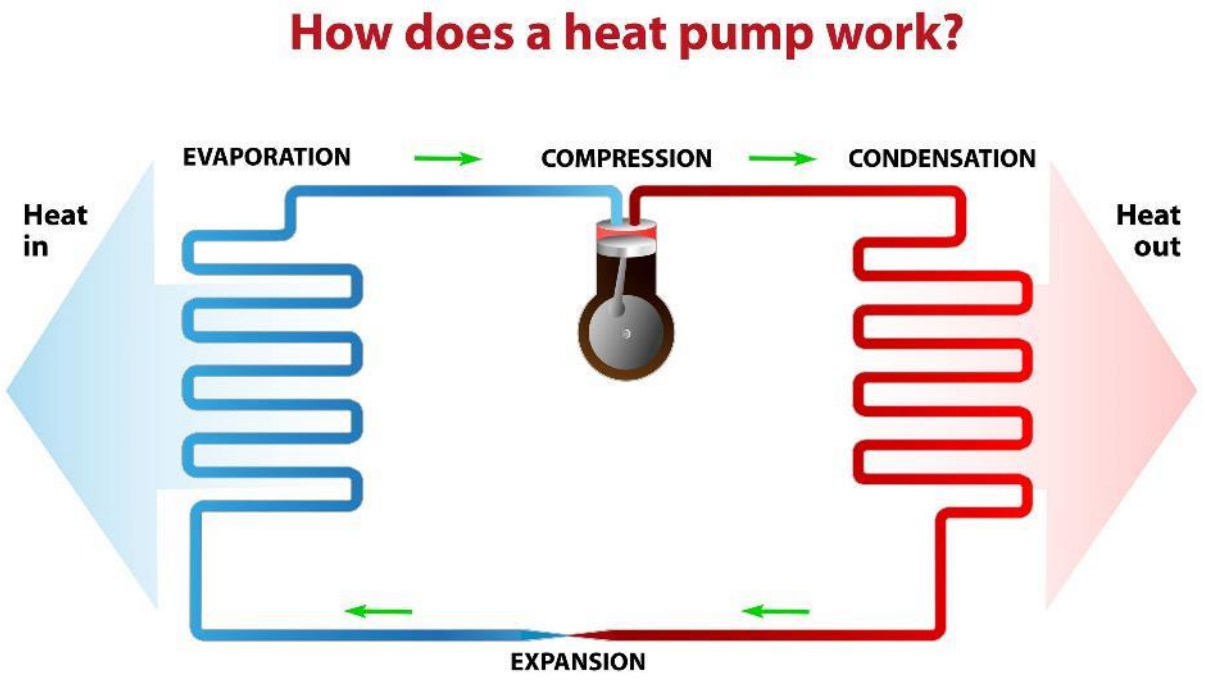
Pierre Delforge, NRDC

March 19, 2020



Developed with input from broad industry and climate advocates coalition

Heat Pump Technology 101



- Vapor compression cycle (most common)
- Uses refrigerant fluid to move heat instead of generating it
  - ➢ 200% to 400%+ efficient!
- Not new:
  - First invented in 1850s (Lord Kelvin)
  - Widely used since 1950s in refrigerators and air conditioners
  - Application in water heating more recent

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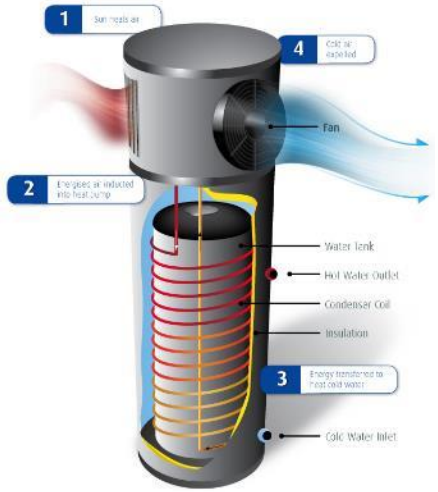
Main Types of HPWH

Unitary

Small Residential



Small Commercial

Central

Large Residential and Commercial

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Electrical Capacity and Thermal Storage

Unitary		Central
Small Residential	Small Commercial	Large Residential and Commercial
Capacity (output): 1.5 kW (≈microwave) to 4.5 kW (clothes dryer) **Storage:** 50-80 gallons	6 - 10 kW (electric range) 120+ gallons	10 to 100s kW (≈ EV fast charger) 100s to 1000s gallons

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Storage Capacity

How does thermal storage compare with electro-chemical batteries?

Electric Storage Capacity (Gallons to kWh)

Set point	Tank volume: 50 gal	65 gal	80 gal
120 F	2.4	3.2	3.9
130 F	2.9	3.7	4.6
140 F	3.3	4.2	5.2
150 F	3.7	4.8	5.9

NRDC calculation based on 60 F inlet temperature and average COP of 3

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Market Actors and Typical Project Costs

Unitary

Small Residential

Small Commercial

Market Actors

- **Replacement**: retailers, distributors, plumbers, DIY homeowners
- **New construction**: production builders and plumbers

Project Costs

- **Equipment:** $1,200 - $4,000
- **Basic installation:** $1,000 - $1,500
- **Load shifting**: equipment++, mixing valve
- **Additional costs:** electrical circuit, panel upgrade…

Central

Large Residential and Commercial

Key Market Actors

- Design firms (Mechanical, Engineering, Plumbing / MEP)
- Developers

Project Costs

- $2,000-$4,000 / apartment (without load shifting)
- **Additional costs**: incremental heat pump capacity and storage

Unitary or Central for Apartment Buildings?

Unitary

- More efficient (minimal distribution losses)
- Challenging to retrofit in existing buildings

Central

- Vast majority of existing 4+ story MF (gas boilers)
- Saves real estate
- Building code modeling limitations, but full resolution expected 2020

➢ The market needs both, best option depends on the job. Let the market work that out, support both in tech neutral manner.

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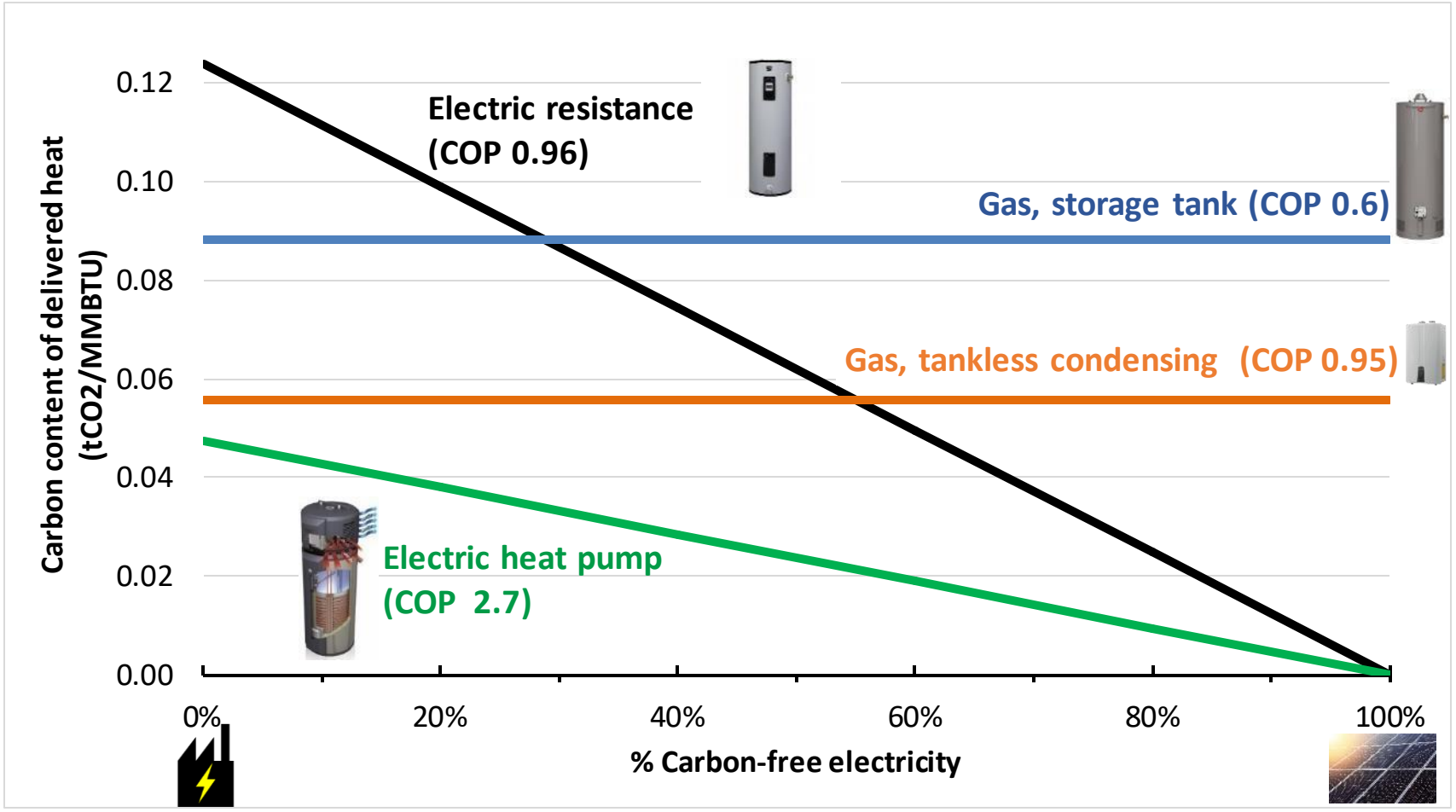
GHG Emissions (Without Load Shifting)

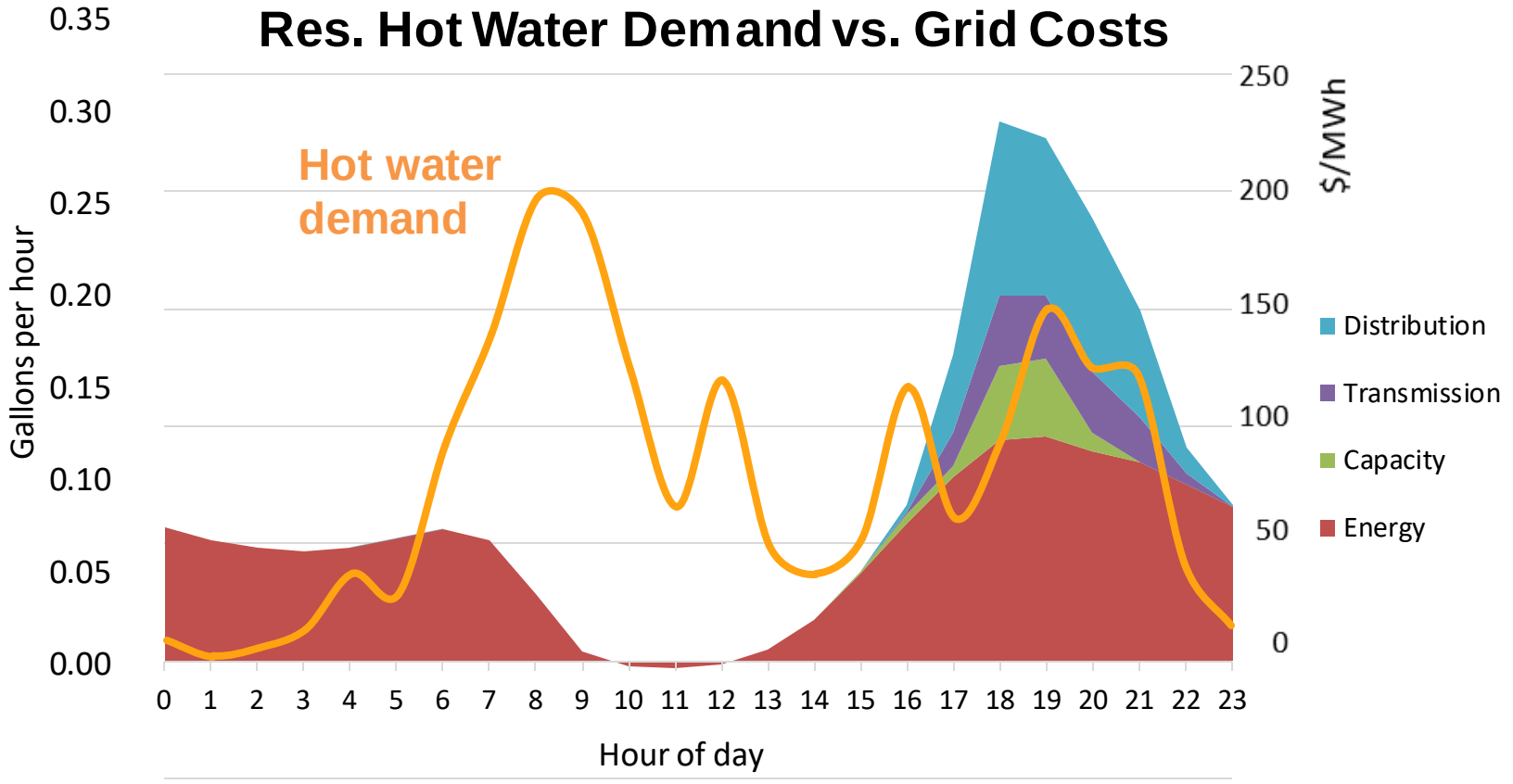


- A HPWH installed today will reduce GHGs by **50% to 70%** over lifetime compared to gas-fired alternatives[1]

(1) Without load shifting, based on grid hourly marginal emissions, Brockway - Delforge, The Electricity Journal, 2018

1) Not including fugitive methane emissions, which may almost double GHG emissions from gas with 20-year GWP
2) With 45%-efficient combined cycle gas plant as marginal fossil resource

Hot Water Demand Profile - Residential



ter draws: Kruis, N., Wilcox, B. Lutz, J. California Residential Domestic Hot Water Draw Profile Selection Methodology. May 18, 2016
›sts: PG&E GRC phase 2, 2024 projection

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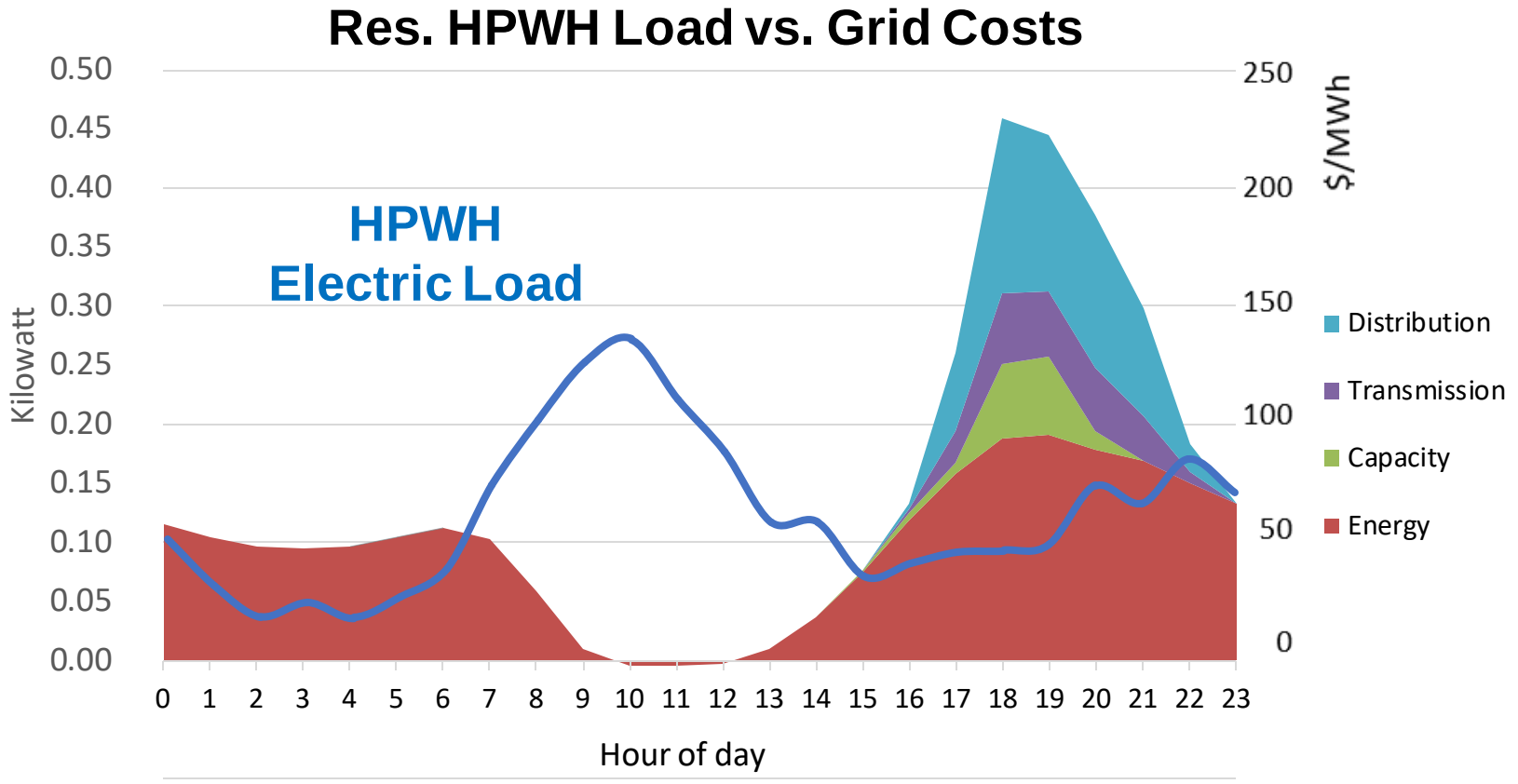
HPWH Operation Profile – Without Load Shifting



e:

WH Load: Carew N. et. al., “Heat Pump Water Heater Electric Load Shifting: A Modeling Study”, Ecotope, Jun. 2018

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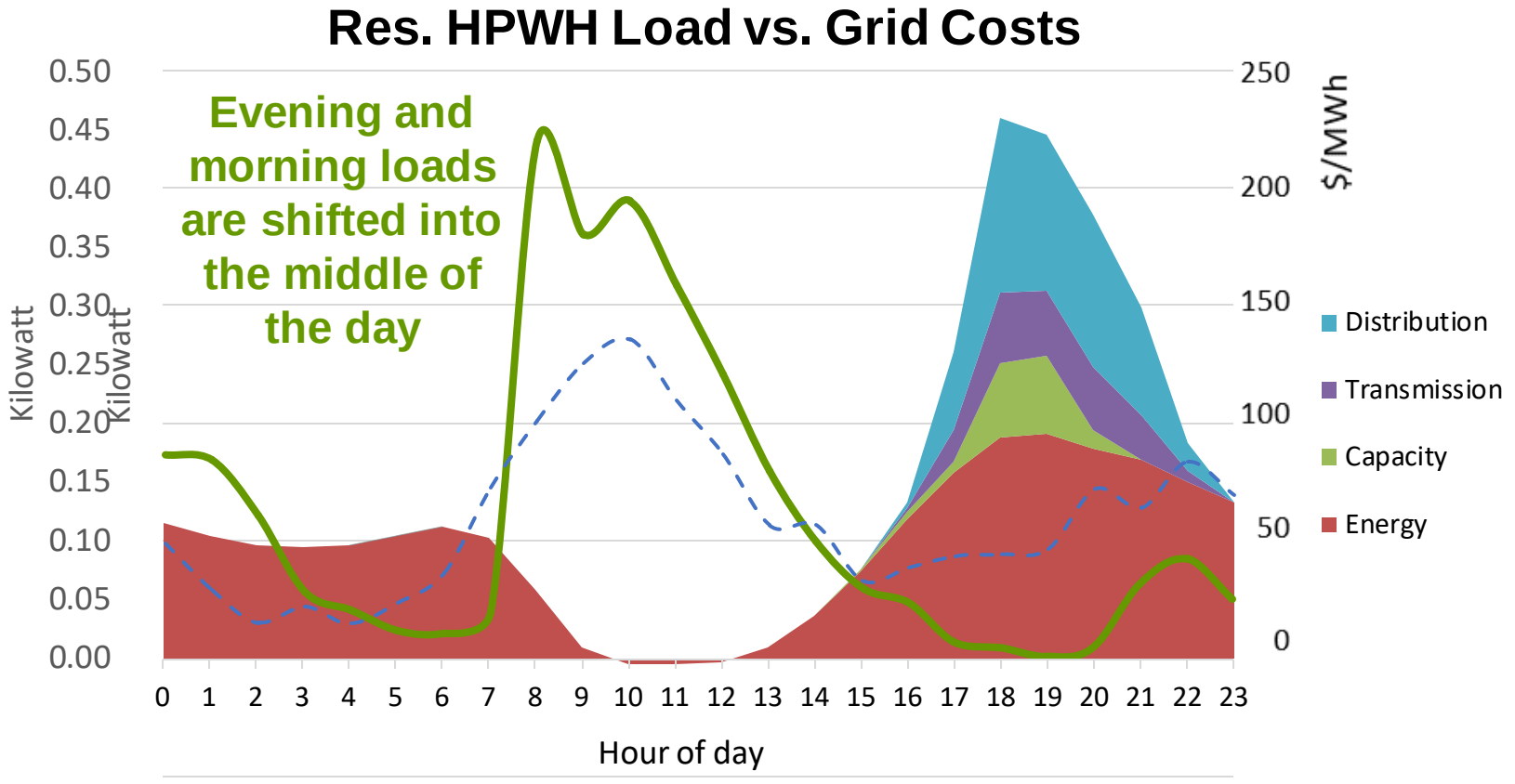
HPWH Operation Profile – With Load Shifting



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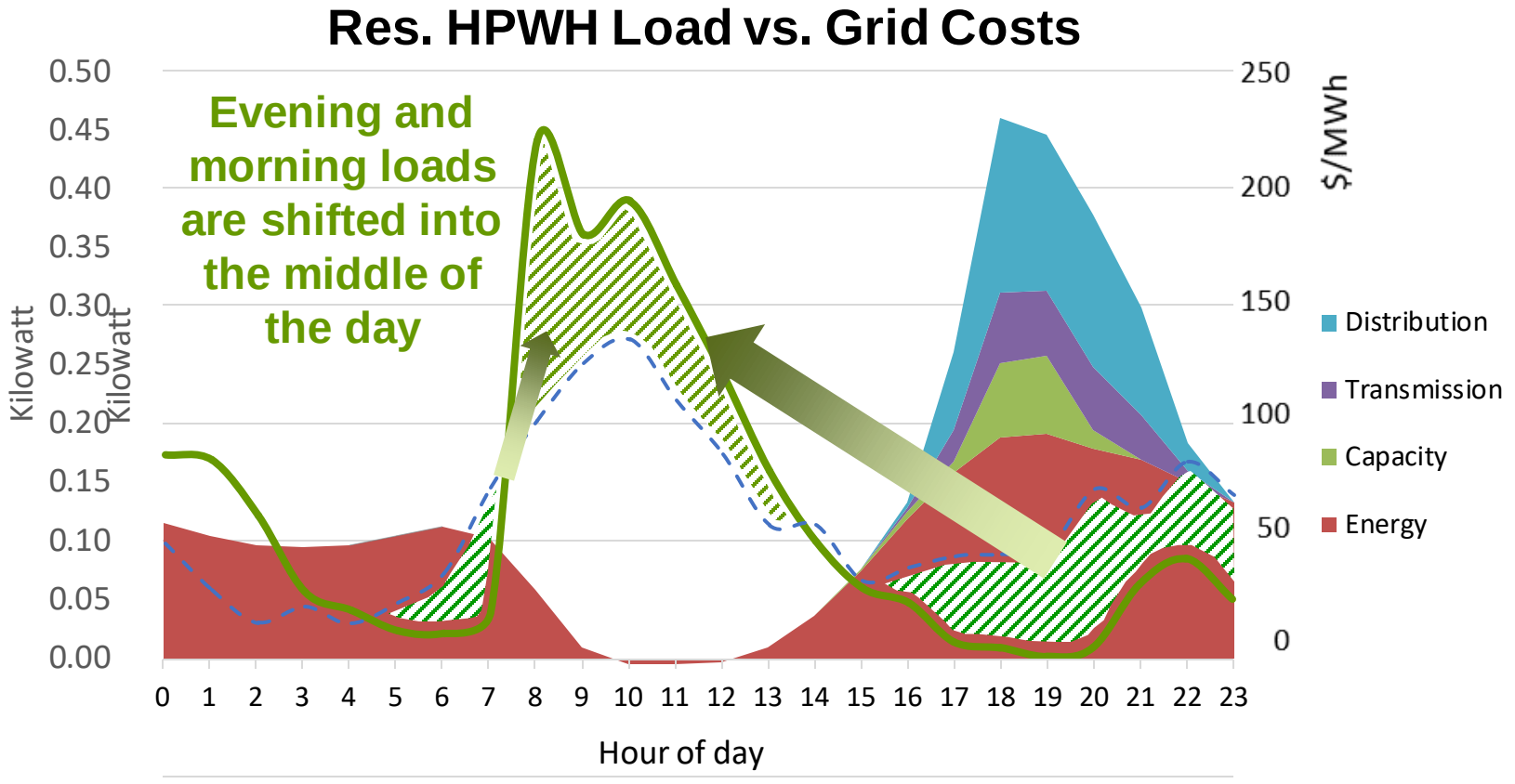
HPWH Operation Profile – With Load Shifting



e:
WH Load: Carew N. et. al., “Heat Pump Water Heater Electric Load Shifting: A Modeling Study”, Ecotope, Jun. 2018

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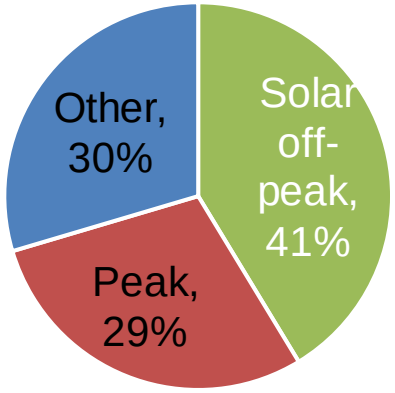
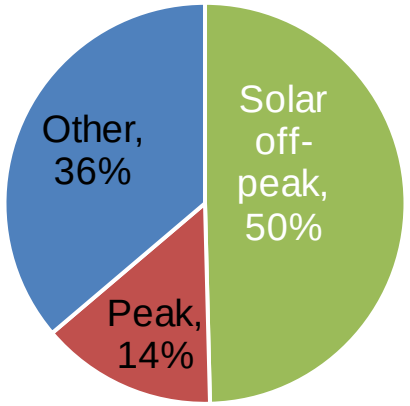
Peak Coincidence

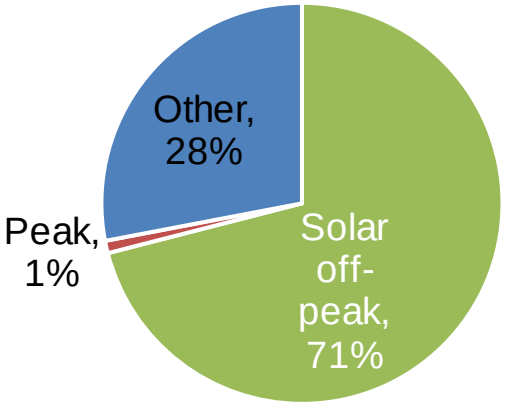
Hot Water Draws



HPWH
No Load Shifting



HPWH
With Load Shifting



Off-Peak Solar: 8 am – 3 pm (excluding afternoon ramp > 3 pm)
Peak: 5 pm – 9 pm

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Other Sector Hot Water Demand Profiles

Similar load profiles for:

- Multi-family housing
- Residence halls / dormitories
- Fitness centers / gyms
- Hotels / motels

Different for:

- Restaurants (primary evening peak)

Center for Energy and Environment, "Evaluation of New DHW System Controls in Hospitality and Commercial Buildings", June 2018

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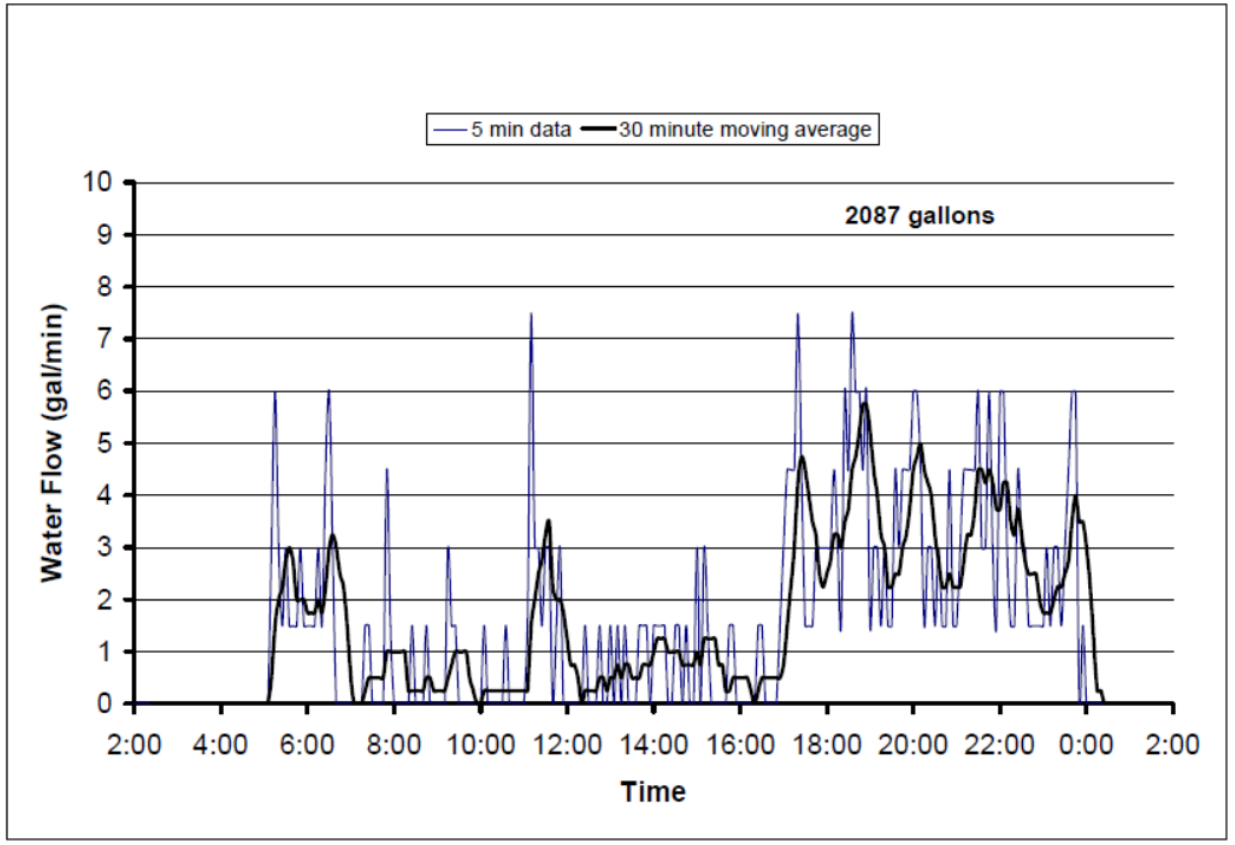
Full Service Restaurant Daily Hot Water Load Profile



- Peak demand highly grid-peak coincident (California)
- Even if storage capacity is too limited to shift entirely load, any amount of load shifting can still provide high grid value

Pacific Gas and Electric. 2007. *Energy Efficiency Potential of Gas-Fired Commercial Hot Water Heating Systems in Restaurants: An Emerging Technology Field Monitoring Study.* FSTC Report 5011.07.04. San Ramon, Calif.: PG&E Food Service Technology Center.

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Control Options

- **HPWH Load Shifting Control Market Status:**
  - First version technology available
  - First CA programs: SMUD, Sonoma CP GridSavvy, PG&E Watter Saver

- **Standards**
  - **OpenADR**: Automated demand response
  - **CTA 2045**: Physical port at water heater + standard control commands
  - **JA13**: Storage and load shifting requirements (TOU/dynamic grid control), *pending CEC adoption*

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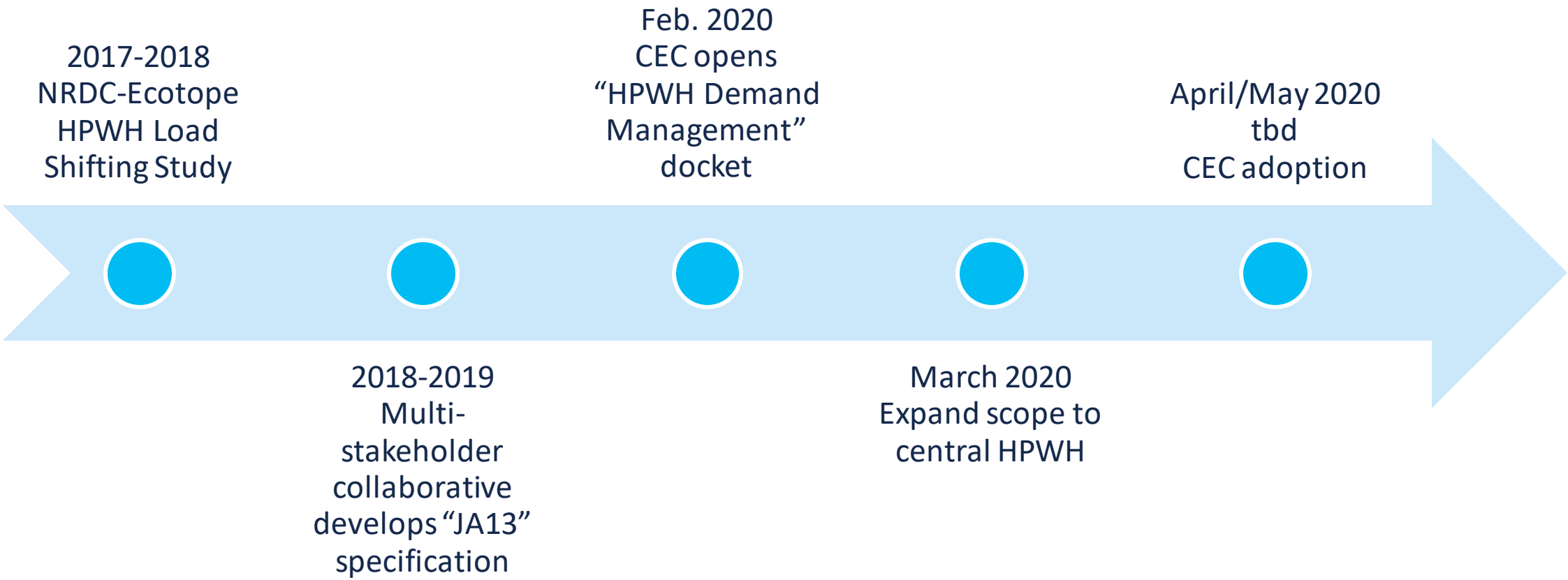
"JA13" HPWH Demand Management Specification (Proposed Joint Appendix 13 of Title 24 Part 6)



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JA13 Requirements

Requires:

1. Local TOU capability + setup at installation
2. Advanced control capability
3. Storage and load shifting requirements

Local TOU Control

- Permanent grid connectivity not required
- Lower entry point: opt-out, designed for mass adoption
- Protects utility customers from peak TOU prices, significant grid value
- But: will customers update their HPWH if TOU time periods change?

Advanced Control (Grid-Interactive)

- Higher grid value potential

But:

- Requires availability of load shifting program in local area + customer opt-in ⇨ lower adoption
- Connectivity challenges: Wi-Fi reliability and persistence issues, cellular still expensive, FM radio (1-way), LoRa…

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Barriers: How can SGIP help achieve grid-friendly HPWH market transformation

- Everyone has a water heater. CA market 90% gas.
  - ➢ Big opportunity and challenge
- Mostly replacement on failure, speed is of the essence.
  - ➢ Any successful market transformation program needs to be **simple, available to all channels,** and **easy to access**
- Gas-to-electric conversion complicated by building **electric infrastructure** limitations
  - ➢ Additional project costs
- Unitary products are high-volume, low-touch installs, more like a **home appliance**.
  - ➢ Very different from the existing projects/products in SGIP
- Central applications are more custom and a more sophisticated program scheme makes sense
- Load shifting matters:
  - ✓ Enables gas-to-HPWH market transformation **without increasing peak load**, and helping **utilize midday solar energy**
  - ✓ Enhances **HPWH customer value** with meaningful TOU rates
  - ✓ But need thriving HPWH market first, hence initial focus on HPWH market development

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Thank you!

Pierre Delforge
pdelforge@nrdc.org

Self-Generation Incentive Program (SGIP)
Heat Pump Water Heater (HPWH)
Workshop

Break until 11:00 AM

California Public Utilities Commission (CPUC)

SGIP HPWH Program Design Principles

Developed with input from broad industry and climate advocates coalition

HPWHs are Fundamentally Different than Typical SGIP Systems

- Unitary HPWHs are more analogous to home appliances
- Water heaters are a necessity for every home
- Consumers typically purchase water heaters when their existing one breaks and seek to replace a broken system within hours
- SGIP rebates for unitary HPWHs must be instant and readily available via a simple process. Otherwise, the State misses out on a critical opportunity to upgrade for an additional 12 to 15 years (when the water heater is likely to be replaced again)

Principles

- Ease of Validation
- Simple, Yet Verifiable Application Processes
  - Differentiated by size
- Extra Incentives Should be Provided to Systems that Can Provide Additional Help to the Grid
- Additional Project Costs
- The Current SGIP “Developer Cap” is Not Applicable to HPWHs
- No Double Dipping
- Equity Assistance

Ease of Validation

- SGIP eligibility for HPWH models should be linked to easily validated programs
- Examples: Eligible HPWH models would be only those certified by NEEA for advanced water heating specification Tier 3 version 7, California Energy Commission for JA13, EPA's ENERGY STAR program, or California Energy Commission's Title 24 CBECC Software or equivalent notification
- The SGIP Program Administrators shall establish a linked list with the CEC, NEEA, and EPA's ENERGY STAR eligible HPWH lists. These lists by EPA, NEEA, and CEC shall be hyperlinked in the SGIP handbook

Simple, Yet Verifiable Application Processes

Similar to today's SGIP, the HPWH program shall have different reservation processes depending on the type and size of the project and incentive amount.

Smaller HPWH Systems (small residential and commercial)

- A midstream instant rebate that is available to the distributor, contractor, or retailer within the IOU service territories.
- A new mobile portal in the SGIP database will need to be established and maintained by the SGIP Program Administrators to verify eligibility and capture end-user address data.

Smaller HPWH Systems (small residential and commercial) - Continued

- For example, a customer would go to a big-box retail store that is advertising an instant rebate. The customer could use their smartphone to scan a QR code and enter the data necessary to get the rebate redemption code. The rebate would then be given directly to the customer by the big-box retailer.
- The rebate would be given instantly and cross-referenced with available SGIP funds in a given IOU service territory in real-time. At this point, funds would be “reserved” and the distributor, contractor, or retailer would receive reimbursement on a monthly basis.
- Additional eligible project costs would be applied for via an additional rebate process once work is complete and proven. The same online system would be used.

Larger HPWH Systems (large residential and commercial)

- A 2-step process wherein (1) the incentive amount is reserved and (2) the project is built and verified funding is received by the developer or system owner.
- Due to longer project lifecycles (18-24 months) than smaller projects, developers need assurance that incentives will be available at time of project completion.
- Similar to SGIP projects today, project cap levels will be established and some sort of performance-based payment shall be considered.
  - M&V for HPWHs is different than for storage.

Extra Incentives for Systems that Provide Additional Help for the Grid

- HPWHs that can shift load should be provided with an additional incentive because of the additional value they can provide to the grid.
- Systems must meet pre-set eligibility requirements (e.g., JA13 compliance, outlined in table below) and must also be on the SGIP pre-approved HPWH lists discussed above (i.e., CEC, NEEA, and EPA's ENERGY STAR eligible HPWHs.)

Additional Project Costs

- All HPWH projects shall be eligible for additional project costs to include:
  - labor
  - panel upgrades
  - wiring
  - supply and return plumbing
  - electrical components
  - expansion tanks
  - code required upgrades
  - construction costs.
- Smaller systems will submit for additional project costs post installation via the online portal once work is completed. Larger systems will submit via their application process (similar to large storage projects today).

No Developer Cap for HPWHs

- The current SGIP developer cap is not an applicable proxy for HPWH incentives.
- The developer cap should be eliminated for the HPWH rebate.

No Double Dipping

- HPWHs that receive an SGIP incentive shall not be eligible for other active rebates or incentives.
- All IOU customers are eligible for rebates relating to eligible product costs as described above.
- Recipients shall decide which program they want to take advantage of.

Equity Considerations

- Projects serving disadvantaged communities shall be given special consideration in distribution of funds, either via a special adder for projects in designated zip codes or by allocating a portion of HPWH funding for customers in those zip codes.

HPWH

HPWH TYPE	APP. PROCESS	SIZE (total compressor nominal output power)	REBATE AMOUNT	LOAD SHIFTING CAPABILITY ADDER	ADDITIONAL ELIGIBLE PROJECT COSTS	ELIGIBILITY
Small Residential	Instant Rebate + Adder for Additional Costs	< 6 kW	$XXX / unit	$XXX / unit	$XXX / unit	NEEA Tier 3 compliant (+must also be JA13-compliant for DR adder)
Small Commercial	Instant Rebate + Adder for Additional Costs	6-10 kW	$XXX / unit	$XXX / unit	$XXX / unit	ENERGY STAR CERTIFIED (+must also be JA13- compliant for DR adder)
Large Residential and Commercial	2-Step Reservation Process	≥ 10 kW	$XXX / kW	$XXX / kW	$XXX / kW	Approval in CEC Title 24 CBECC software (+must also be JA13- compliant for DR adder)

Q&A & Open Discussion

Reminder:

All participants are in listen-only mode by default.

Please submit questions/comments via the WebEx chat and/or use the “raise hand” function.